

# NAVAL POSTGRADUATE SCHOOL

## Monterey, California



## THESIS

BRACKET CREEP AND DEADWEIGHT FROM  
CALIFORNIA'S STATE INCOME TAX, 1958-1977

by

Erik J. Neal

June 2002

Thesis Advisor:  
Co-Advisor:

David R. Henderson  
Raymond E. Franck

Approved for public release; distribution is unlimited

THIS PAGE INTENTIONALLY LEFT BLANK

<b>REPORT DOCUMENTATION PAGE</b>			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington DC 20503.				
1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE June 2002		3. REPORT TYPE AND DATES COVERED Master's Thesis
4. TITLE AND SUBTITLE Title Bracket Creep and Deadweight Loss from California's State Income Tax, 1958-1977			5. FUNDING NUMBERS	
6. AUTHOR (S) Erik J. Neal			8. PERFORMING ORGANIZATION REPORT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School Monterey, CA 93943-5000			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A			11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the U.S. Department of Defense or the U.S. Government.	
12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited			12b. DISTRIBUTION CODE	
13. ABSTRACT (maximum 200 words) This thesis shows that a combination of "bracket creep" and legislated tax rate increases during the Edmund G. "Pat" Brown and Ronald Reagan governorships caused individual marginal tax rates to increase as much as 600 percent. A person earning \$20,000 in 1958 was in the three percent bracket for state income taxes. Assuming this person received no real pay raises, his inflation-adjusted income in 1977 was now \$41,938 and his marginal tax bracket was 11 percent. This person experienced a 355 percent increase in real taxes paid. The deadweight loss calculations show how bracket creep and legislated tax rate increases exacerbate deadweight loss. The more revenue the federal or state government tries to collect, the more deadweight loss society as a whole incurs. Using elasticities (of taxable income with respect to tax rates) ranging from .3 to 1.0, the incremental deadweight loss as a percent of incremental revenue collected from 10.6 percent for an elasticity of .3, to as high as 35.53 percent for an elasticity of 1.0. The deadweight loss calculations show that for every dollar in revenue collected, at least 10.7 cents to as much as 35.5 cents per dollar is lost to deadweight loss.				
14. SUBJECT TERMS Bracket Creep and Deadweight Loss			15. NUMBER OF PAGES 48	
17. SECURITY CLASSIFICATION OF REPORT Unclassified			18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	
19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified			20. LIMITATION OF ABSTRACT UL	

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)  
Prescribed by ANSI Std. Z39-18

THIS PAGE INTENTIONALLY LEFT BLANK

Approved for public release; distribution is unlimited

**BRACKET CREEP AND DEADWEIGHT LOSS FROM CALIFORNIA'S STATE  
INCOME TAX, 1958-1977**

Erik J. Neal  
Lieutenant, United States Navy  
B.A., Seattle University, 1996

Submitted in partial fulfillment of the  
requirements for the degree of

**MASTER OF SCIENCE IN MANAGEMENT**

from the

**NAVAL POSTGRADUATE SCHOOL  
June 2002**

Author: Erik J. Neal

Approved by: David R. Henderson  
Principal Advisor

Raymond E. Franck  
Associate Advisor

Douglas A. Brooke, Ph.D.  
Dean, Graduate School of Business and Public  
Policy

THIS PAGE INTENTIONALLY LEFT BLANK

## **ABSTRACT**

This thesis shows that a combination of "bracket creep" and legislated tax rate increases during the Edmund G. "Pat" Brown and Ronald Reagan governorships caused individual marginal tax rates to increase as much as 600 percent. A person earning \$20,000 in 1958 was in the three percent bracket for state income taxes. Assuming this person received no real pay raises, his inflation-adjusted income in 1977 was now \$41,938 and his marginal tax bracket was 11 percent. This person experienced a 355 percent increase in his marginal tax rate.

The deadweight loss calculations show how bracket creep and legislated tax rate increases exacerbate deadweight loss. The more revenue the federal or state government tries to collect, the more deadweight loss society as a whole incurs. Using elasticities (of taxable income with respect to tax rates) ranging from .3 to 1.0, the incremental deadweight loss as a percent of incremental revenue collected ranged from 10.6 percent for an elasticity of .3, to as high as 35.53 percent for an elasticity of 1.0. The deadweight loss calculations show that for every dollar in revenue collected, at least 10.7 cents to as much as 35.5 cents per dollar is lost to deadweight loss.

THIS PAGE INTENTIONALLY LEFT BLANK



## TABLE OF CONTENTS

I.	INTRODUCTION .....	1
A.	OVERVIEW .....	1
B.	RESEARCH QUESTIONS .....	1
C.	DISCUSSION .....	1
D.	SCOPE OF THE THESIS .....	2
E.	METHODOLOGY .....	2
F.	ORGANIZATION OF THESIS .....	2
II.	THE EVOLUTION OF CALIFORNIA'S STATE INCOME TAXES .....	5
A.	BACKGROUND .....	5
B.	THE EARL WARREN ERA .....	6
C.	THE EDMOND G. "PAT" BROWN ERA .....	7
E.	BRACKET CREEP .....	9
III.	THE EFFECTS OF STATE INCOME TAXES ON THE ELASTICITY OF INCOME .....	21
A.	BACKGROUND AND GRAPHIC ILLUSTRATION OF DEADWEIGHT LOSS .....	21
B.	CALCULATING DEADWEIGHT LOSS (DWL) .....	24
IV.	CONCLUSION .....	29
A.	CONCLUSIONS .....	29
	LIST OF REFERENCES .....	31
	INITIAL DISTRIBUTION LIST .....	33

THIS PAGE INTENTIONALLY LEFT BLANK

## LIST OF FIGURES

Figure 3.1. Labor Market at Equilibrium.....	22
Figure 3.2. Labor Market with FIT.....	23
Figure 3.3. Labor Market with FIT and SIT.....	24

THIS PAGE INTENTIONALLY LEFT BLANK

## LIST OF TABLES

Table 2.1.	The Effects of Bracket Creep for Married Filing Joint Returns.....	10
Table 2.2.	Married Persons Filing Joint Returns.....	10
Table 2.3.	Single and Married Persons Filing Separate Returns.....	12
Table 2.4.	Unmarried Heads of Household.....	13
Table 2.5.	CPI-U. [Ref: Consumer Price Index, 1913-2002....	17
Table 3.1.	Deadweight Loss from State Taxes with an Elasticity of .3.....	26
Table 3.2.	Deadweight Loss from State Taxes with an Elasticity of .5.....	27
Table 3.3.	Deadweight Loss from State Taxes with an Elasticity of .7.....	28
Table 3.4.	Deadweight Loss from State Taxes with an Elasticity of 1.....	28

THIS PAGE INTENTIONALLY LEFT BLANK

## **I. INTRODUCTION**

### **A. OVERVIEW**

This thesis studies the California income tax system from 1935 to 2001—specifically, the marginal tax rates at various real-income levels, taking into account the interaction between the state and federal tax systems.

### **B. RESEARCH QUESTIONS**

This thesis explains and answers the following questions:

- Why are California's income tax rates so high?
- How has inflation affected marginal income tax bracket creep?
- What is the deadweight loss (the loss to society) caused by high tax rates?

### **C. DISCUSSION**

One of the major factors affecting economic activity in a location is that location's tax system. All other things equal, the lower the tax rate in an area, the more attractive the area is for economic activity. This matters for location across states because movement from one state to another is relatively low cost. The fact that workers can move from California to Nevada, for example, means that wages net of taxes will tend to equalize, which means that wages net of taxes will tend to be higher in the high-tax-rate state. This fact, in turn, means that production will be more expensive in the high-tax state. This is particularly relevant for defense production—and even for location of military bases—because the Department of Defense (DoD) often has the option of choosing one state over another.

It becomes important, therefore, to understand the tax systems of various states. California's tax system is particularly important to understand because California's economy is the fifth-largest in the world. [Ref. 1]

#### **D. SCOPE OF THE THESIS**

This thesis includes: (1) historical income tax tables from 1935 to 2001; (2) a narrative of three time periods in California's history—Governors Earl Warren's, Pat Brown's and Ronald Reagan's administrations; (3) an inflation adjustment to the tax tables showing bracket creep and the impact on marginal tax rates for the people at various real income levels; and (4) an estimate of the deadweight loss of California's income tax system, based on California taxes and on the interaction between the state and federal tax systems.

#### **E. METHODOLOGY**

- Compile California income tax tables from 1935 to 2001.
- Provide an historical perspective on California state taxes.
- Calculate income tax rate bracket creep.
- Use elasticities of taxable income with respect to tax rates to calculate deadweight loss from high tax rates.

#### **F. ORGANIZATION OF THESIS**

Chapter II provides the background for this thesis by: (1) describing the income tax system and how it has evolved; (2) providing historical income tax tables from 1935 to 2001; (3) providing an historical narrative of three governors, their tenures, and their effect on taxes; and (4) adjusting tables for inflation (bracket creep). Chapter III calculates the deadweight loss from the



California state income tax system. Chapter IV states a conclusion.

THIS PAGE INTENTIONALLY LEFT BLANK

## **II. THE EVOLUTION OF CALIFORNIA'S STATE INCOME TAXES**

### **A. BACKGROUND**

Prior to 1935, local governments in California relied primarily on property taxes for revenue. The Great Depression of the 1930s was the single most significant event that led to adoption of sales and state income taxes. During the Depression, property owners found it increasingly difficult to pay their property taxes and sought relief by way of a voter referendum to change existing property tax laws.

Elementary and secondary school expenditures were mandated by the state and paid with local property taxes. If property tax relief were to occur, the state would have to bear more of the fiscal burden. Proponents of property tax relief included Proposition 9 on the general election ballot of 08 November, 1932. The bill, if passed, would have provided property tax relief, but also would have permitted the introduction of sales and personal income taxes. [Ref. 2:p. 59] Proposition 9, which was poorly worded, was defeated by a vote of 1,144,449 to 552,738.

In 1933, the Great Depression was in full swing. California's general fund surplus, funded by a gross receipts tax on utilities, was depleted, and the state's first deficit was growing. Something had to be done. The governor's ideas for fiscal recovery fell on deaf ears. Meanwhile, the legislature drafted its solution, the Riley-Stewart initiative.

The Riley-Stewart initiative, which the voters approved in a special election on 27 June 1933, had four main components: public utility property was to be returned to local property tax rolls and the gross receipts tax abolished in 1935; the state would provide additional support for elementary and secondary schools; limits were to be placed on expenditure increases both at the state and local level; and the Legislature was to be authorized to raise additional revenue to meet the cost for school aid. The source of this revenue was not described in the initiative but it was generally acknowledged that a sales tax would be necessary. [Ref. 2:p. 59]

The initiative was passed and gave rise to new problems. Now that the state was paying for school aid, the general fund deficit grew. In order to cover this new expense, the state adopted retail sales taxes and tried to adopt personal income taxes. Governor Sunny Jim Rolph vetoed the personal income taxes. It is important to note that the California State budget operated on a biennium.

After Rolph died in office, Frank Merriam succeeded him as governor and then won the nomination in 1934. Merriam inherited a large budget deficit and, by 1935, the budget deficit had increased even further. His solution was an increase in retail sales taxes from two percent to three percent and a personal income tax. [Ref. 2:p. 60] The Legislature approved his requests, and California residents have been paying personal income taxes since then.

#### **B. THE EARL WARREN ERA**

Earl Warren was elected in 1943 and served three consecutive terms. He inherited a state budget recovering from ten years of deficits (1931-1941). [Ref. 3:p. 7] World War II stimulated California's economy, and, by 1943, the

general fund revenue-to-expenditure ratio was greater than one. Instead of increasing government spending, Governor Warren successfully advocated saving surpluses generated by the wartime economy. As the surplus grew, Warren cut sales taxes from three to two-and-one-half percent and the maximum personal income tax rate from fifteen to six percent. [Ref. 3:pp. 11-12] According to an article by David Doerr in the *Cal-Tax Digest*, "By 1947, the state had sequestered \$472 million in various reserve funds for emergency use." [Ref. 3:p. 12] California state tax laws remained relatively unchanged until 1959, when Edmond G. "Pat" Brown took office.

### **C. THE EDMOND G. "PAT" BROWN ERA**

Edmond G. "Pat" Brown became governor on January 5, 1959. The surpluses accrued by Governor Warren had been used up during the years from 1955 through 1958. During this time there were gross imbalances between revenue and expenditures caused by an increase in state funding for education. The legislature chose not to raise personal income taxes or sales taxes; however, it did raise taxes on gasoline and car registrations from four-and-one-half cents to six cents per gallon and from six to eight dollars, respectively. The revenues generated were not enough to cover the entire cost of the increased expenditures on education, and the reserve funds, or surplus, accumulated under Governor Warren were depleted. [Ref. 3:p. 13]

Governor Brown faced budget deficits reminiscent of the Warren era. Republicans favored cutting government spending, but Brown chose to increase taxes. According to Doerr, "To fund his new budget, Governor Brown suggested a

\$202 million tax increase, the largest such increase in nearly a quarter century." [Ref. 4:p. 2] Central to his tax increases was the change to personal income taxes from the six-percent maximum set by Governor Warren to seven percent, the narrowing of tax brackets from \$10,000 to \$5000 for married couples filing jointly and from \$5000 to \$2500 for all others, and a reduction of personal exemptions. These changes were intended to produce \$60.7 million dollars of revenue. [Ref. 4:p. 2] Personal income tax laws remained unchanged for the remainder of Brown's time in office.

#### **D. THE RONALD REAGAN ERA**

Ronald Reagan was elected Governor on January 2, 1967. Doerr describes the steps that Reagan took to cut government spending:

He first ordered a hiring freeze, a 10-percent budget cut of all state agencies, and other expenditure reductions. However, it soon became apparent that taxes would have to be raised substantially. Mr. Reagan was only able to slow the rate of growth of the state's general fund expenditures only 8 percent from 1966-1967 to 1967-68, compared to 16 percent in the year prior). [Ref. 4:p. 2]

Reagan's actions were not enough, however, and he chose to raise taxes to cover the gap between expenditures and revenue. The maximum personal income tax was raised from seven to ten percent. Tax brackets were narrowed once again, from \$5000 to \$4000 for joint and single returns. Governor Reagan passed several other tax increases not related to personal income taxes; these are beyond the scope of this thesis and will not be addressed.

## **E. BRACKET CREEP**

According to Taxopedia, a web-based tax information site, bracket creep occurs

when inflation pushes income into higher tax brackets. The result is no increase in real purchasing power but an increase in income tax payable. [Ref. 5]

Bracket creep, if left unchecked, is a crafty means by which federal, state or local governments can collect additional revenues from taxpayers without explicitly raising income tax rates.

Many features of personal income taxes are defined by fixed dollar amounts. For instance, income taxes have various rates starting at different dollar amounts of income. If these fixed amounts are not adjusted periodically, taxes can go up substantially simply because of inflation. Over time, bracket creep tends to reduce the real value of other important features of the tax system, such as exemptions and standard deductions, as well.

Table 2.1 illustrates the effects of bracket creep and legislated tax rate increases in California for different levels of income and calculates the percentage increase in real income and marginal tax rates from 1958 dollars to 1977 dollars. For example, a married person filing a joint return earning \$5000 in 1958 would be in the one-percent tax bracket and pay \$50 in state taxes for the year. That same \$5000 in income equates to \$10,484 in 1977 dollars. The \$50 in taxes paid, inflation adjusted to 1977 dollars is now \$105, assuming the person earned the same pay in real terms. He pays \$209 in taxes in 1977. The percentage increase in real taxes paid is 100 percent, and the percentage increase in the marginal tax rate is 300

percent. This shows that a person making \$5000 in 1958, assuming no increase in real pay, paid 100 percent more in state taxes on the same amount of income and experienced a 300-percent increase in his or her marginal tax rate.

Table 2.1. The Effects of Bracket Creep for Married Filing Joint Returns.

Married Filing Joint Returns									
Base				1958 adjusted		From 1958 to 1977			
Year	Income	Tax rate	Tax paid	77\$	Income	Tax rate	Tax paid	% incr in real tax	% incr in MTR
1958	\$5,000	1%	\$50	\$105	\$10,484	4%	\$209	100%	300%
	\$10,000	1%	\$100	\$209	\$20,969	7%	\$778	271%	600%
	\$20,000	3%	\$300	\$629	\$41,938	11%	\$2863	355%	267%
	\$30,000	3%	\$600	\$1258	\$62,907	11%	\$5170	311%	267%

The following tables are the historical personal income tables for California from 1935 to 1993 and the consumer price index from 1913 to 2001. These tables were used for the calculations in Table 2.1.

Table 2.2. Married Persons Filing Joint Returns.

Taxable Income (adjusted gross income less deductions and exemptions)			Taxable Year				
			1935-42	1943-48a	1949-51	1952-58b	1959-66c
Up to	\$2,500		1.0%	1.0%	1.0%	1.0%	1.0%
\$2,500 to	5,000		1.0	1.0	1.0	1.0	1.0
5,000 to	7,500		2.0	1.0	2.0	1.0	2.0
7,500 to	10,000		2.0	1.0	2.0	1.0	2.0
10,000 to	12,500		3.0	2.0	3.0	2.0	3.0
12,500 to	15,000		3.0	2.0	3.0	2.0	3.0
15,000 to	20,000		4.0	3.0	4.0	2.0	4.0
20,000 to	25,000		5.0	4.0	5.0	3.0	5.0
25,000 to	30,000		6.0	5.0	6.0	3.0	6.0
30,000 to	40,000		7.0	6.0	6.0	4.0	7.0
40,000 to	50,000		8.0	6.0	6.0	5.0	7.0
50,000 to	60,000		9.0	6.0	6.0	6.0	7.0
60,000 to	70,000		10.0	6.0	6.0	6.0	7.0
70,000 to	80,000		11.0	6.0	6.0	6.0	7.0
80,000 to	100,000		12.0	6.0	6.0	6.0	7.0
100,000 to	150,000		13.0	6.0	6.0	6.0	7.0
150,000 to	250,000		14.0	6.0	6.0	6.0	7.0
250,000 and over			15.0	6.0	6.0	6.0	7.0



Taxable Income*	Taxable Year				
			1967-72d	1973e,f	
Up to \$4,000			1.0%	1.0%	
\$4,000 to 7,000			2.0	2.0	
7,000 to 10,000			3.0	3.0	
10,000 to 13,000			4.0	4.0	
13,000 to 16,000			5.0	5.0	
16,000 to 19,000			6.0	6.0	
19,000 to 22,000			7.0	7.0	
22,000 to 25,000			8.0	8.0	
25,000 to 28,000			9.0	9.0	
28,000 to 31,000			10.0	10.0	
31,000 and over			10.0	11.0	
Taxable Income*			Taxable Year 1986		
Up to \$3,420			0%		
\$3,420 to 10,420			1		
10,420 to 15,620			2		
15,620 to 20,840			3		
20,840 to 26,160			4		
26,160 to 31,420			5		
31,420 to 36,660			6		
36,660 to 41,860			7		
41,860 to 47,120			8		
47,120 to 52,360			9		
52,360 to 57,580			10		
57,580 and over			11		
Taxable Income*			Taxable Year 1987-90g		
Up to 7,300			1.0%		
7,300 to 17,300			2.0		
17,300 to 27,300			4.0		
27,300 to 37,900			6.0		
37,900 to 47,900			8.0		
47,900 and over			9.3		
Taxable Income*			Taxable Year 1991-92h		
Up to \$8,788			1.0%		
\$8,788 to 20,828			2.0		
20,828 to 32,870			4.0		
32,870 to 45,632			6.0		
45,632 to 57,670			8.0		
57,670 to 200,000			9.3		
200,000 to 400,000			10.0		
400,000 and over			11.0		
Taxable Income*			Taxable Year 1993		
Up to \$9,332			1.0%		
\$9,332 to 22,118			2.0		
22,118 to 34,906			4.0		
34,906 to 48,456			6.0		
48,456 to 61,240			8.0		
61,240 to 212,380			9.3		

212,380 to	424,760	10.0
424,760 and	over	11.0

Table 2.3. Single and Married Persons Filing Separate Returns.

Taxable Income (adjusted gross income less deductions and exemptions)		Taxable Year			
		1935-42	1943-48a	1949-58	1959-66c
Up to	\$2,500	1.0%	1.0%	1.0%	1.0%
\$2,500 to	5,000	1.0	1.0	1.0	2.0
5,000 to	7,500	2.0	1.0	2.0	3.0
7,500 to	10,000	2.0	1.0	2.0	4.0
10,000 to	12,500	3.0	2.0	3.0	5.0
12,500 to	15,000	3.0	2.0	3.0	6.0
15,000 to	20,000	4.0	3.0	4.0	7.0
20,000 to	25,000	5.0	4.0	5.0	7.0
25,000 to	30,000	6.0	5.0	6.0	7.0
30,000 to	40,000	7.0	6.0	6.0	7.0
40,000 to	50,000	8.0	6.0	6.0	7.0
50,000 to	60,000	9.0	6.0	6.0	7.0
60,000 to	70,000	10.0	6.0	6.0	7.0
70,000 to	80,000	11.0	6.0	6.0	7.0
80,000 to	100,000	12.0	6.0	6.0	7.0
100,000 to	150,000	13.0	6.0	6.0	7.0
150,000 to	250,000	14.0	6.0	6.0	7.0
250,000 and	over	15.0	6.0	6.0	7.0
Taxable Income*		Taxable Year			
		1967-72d		1973e,f	
Up to	\$2,000	1.0%		1.0%	
\$2,000 to	3,500	2.0		2.0	
3,500 to	5,000	3.0		3.0	
5,000 to	6,500	4.0		4.0	
6,500 to	8,000	5.0		5.0	
8,000 to	9,500	6.0		6.0	
9,500 to	11,000	7.0		7.0	
11,000 to	12,500	8.0		8.0	
12,500 to	14,000	9.0		9.0	
14,000 to	15,500	10.0		10.0	
15,500 and	over	10.0		11.0	
Taxable Income*		Taxable Year 1986			
Up to	\$1,710	0.0%			
\$1,710 to	5,210	1.0			
5,210 to	7,810	2.0			
7,810 to	10,420	3.0			
10,420 to	13,080	4.0			
13,080 to	15,710	5.0			
15,710 to	18,330	6.0			
18,330 to	20,930	7.0			
20,930 to	23,560	8.0			

23,560 to	26,180	9.0
26,180 to	28,790	10.0
28,790 and over		11.0
Taxable Income*		Taxable Year 1987-90g
Up to	\$3,650	1.0%
\$3,650 to	8,650	2.0
8,650 to	13,650	4.0
13,650 to	18,950	6.0
18,950 to	23,950	8.0
23,950 and over		9.3
Taxable Income*		Taxable Year 1991-92h
Up to	\$4,394	1.0%
\$4,394 to	10,414	2.0
10,414 to	16,435	4.0
16,435 to	22,816	6.0
22,816 to	28,835	8.0
28,835 to	100,000	9.3
100,000 to	200,000	10.0
200,000 and over		11.0
Taxable Income*		Taxable Year 1993
Up to	\$4,666	1.0%
\$4,666 to	11,059	2.0
11,059 to	17,453	4.0
17,453 to	24,228	6.0
24,228 to	30,620	8.0
30,620 to	106,190	9.3
106,190 to	212,380	10.0
212,380 and over		11.0

Table 2.4. Unmarried Heads of Household.

Taxable Income (adjusted gross income less deductions and exemptions)		Taxable Year			
		1935-42	1943-48a	1949-58	1959-66c
Up to	\$2,500	1.0%	1.0%	1.0%	1.0%
\$2,500 to	5,000	1.0	1.0	1.0	2.0
5,000 to	7,500	2.0	1.0	2.0	3.0
7,500 to	10,000	2.0	1.0	2.0	4.0
10,000 to	12,500	3.0	2.0	3.0	5.0
12,500 to	15,000	3.0	2.0	3.0	6.0
15,000 to	20,000	4.0	3.0	4.0	7.0
20,000 to	25,000	5.0	4.0	5.0	7.0
25,000 to	30,000	6.0	5.0	6.0	7.0
30,000 to	40,000	7.0	6.0	6.0	7.0
40,000 to	50,000	8.0	6.0	6.0	7.0
50,000 to	60,000	9.0	6.0	6.0	7.0
60,000 to	70,000	10.0	6.0	6.0	7.0
70,000 to	80,000	11.0	6.0	6.0	7.0
80,000 to	100,000	12.0	6.0	6.0	7.0
100,000 to	150,000	13.0	6.0	6.0	7.0
150,000 to	250,000	14.0	6.0	6.0	7.0

250,000 and over	15.0	6.0	6.0	7.0
	Taxable Year			
Taxable Income*	1967-72d	1973e	1974f,i	
Up to \$3,000	1%	1.0%	1.0%	
\$3,000 to 4,000	2	2.0	1.0	
4,000 to 4,500	2	2.0	2.0	
4,500 to 6,000	3	3.0	2.0	
6,000 to 7,500	4	4.0	3.0	
7,500 to 9,000	5	5.0	4.0	
9,000 to 10,500	6	6.0	5.0	
10,500 to 12,000	7	7.0	6.0	
12,000 to 13,500	8	8.0	7.0	
13,500 to 15,000	9	9.0	8.0	
15,000 to 16,500	10	10.0	9.0	
16,500 to 18,000	10	11.0	10.0	
18,000 and over	10	11.0	11.0	
Taxable Income*	Taxable Year 1986			
Up to \$3,420	0.0%			
\$3,420 to 10,410	1.0			
10,410 to 13,890	2.0			
13,890 to 16,530	3.0			
16,530 to 19,150	4.0			
19,150 to 21,780	5.0			
21,780 to 24,410	6.0			
24,410 to 27,020	7.0			
27,020 to 29,630	8.0			
29,630 to 32,260	9.0			
32,260 to 34,880	10.0			
34,880 and over	11.0			
Taxable Income*	Taxable Year 1987-90g			
Up to \$7,300	1.0%			
\$7,300 to 17,300	2.0			
17,300 to 22,300	4.0			
22,300 to 27,600	6.0			
27,600 to 32,600	8.0			
32,600 and over	9.3			
Taxable Income*	Taxable Year 1991-92h			
Up to \$8,789	1.0%			
\$8,789 to 20,829	2.0			
20,829 to 26,848	4.0			
26,848 to 33,229	6.0			
33,229 to 39,249	8.0			
39,249 to 136,115	9.3			
136,115 to 272,230	10.0			
272,230 and over	11.0			
Taxable Income*	Taxable Year 1993			
Up to \$9,333	1.0%			
\$9,333 to 22,118	2.0			
22,118 to 28,510	4.0			
28,510 to 35,286	6.0			
35,286 to 41,679	8.0			

<b>41,679 to</b>	<b>144,540</b>	<b>9.3</b>
<b>144,540 to</b>	<b>289,081</b>	<b>10.0</b>
<b>289,081 and</b>	<b>over</b>	<b>11.0</b>

**Notes for Tables 2.2 through 2.4:**

- \* Adjusted Gross Income less deductions.
- a. A temporary reduction in tax for lower income levels was effected in this period by widening the initial tax rate bracket from \$5000 to \$10000. This temporary reduction was renewed in 1945, 1947 and 1948, but was allowed to lapse in 1949. In addition, the maximum rate was reduced from %15 on amounts in excess of \$250,000 to %6 on amounts in excess of \$30,000.
- b. Income splitting on joint returns was first effective in this period. Under this provision, married taxpayers who filed joint returns paid tax using a rate that was the same rate as the rate a single taxpayer would use on the same income. This allowed married taxpayers to file one return, instead of splitting their income and filing separate returns to take advantage of a lower tax rate.
- c. The tax brackets were narrowed from \$10,000 to \$5000 for married couples filing jointly and from \$5000 to \$2,500 for all others. At the same time, the maximum rate was increased from six percent to seven percent.
- d. Tax brackets were narrowed and the tax rates increased to 10%. Taxable income was redefined as adjusted gross income less deductions, rather than adjusted gross income less deductions, personal exemptions, and dependent exemptions (Stat. 1967, Ch. 963).

A special 10% reduction in tax liabilities, maximum \$100 for single individuals and \$200 for married couples filing jointly, was effective for the 1969 taxable year (Stats. 1969, Ch. 1464).

A forgiveness tax credit of 20% was provided with respect to 1971 taxes, along with enactment of the

withholding and declaration of estimated tax program, effective on January 1, 1972 (Stats. 1971, [First extraordinary Session], Ch. 1).

- e. The maximum tax rate was increased from 10% to 11% (Stats. 1971, [First Extraordinary], Ch.1). A special income tax credit ranging from 20% to 100% of tax liability was effective for the 1973 taxable (Stats. 1973, Ch. 296).
- f. Tax brackets were indexed at a rate of 5.222% for 1978, 6.88% for 1979, 17.33% for 1980, 8.26% for 1981, 9.32% for 1982, -1.2% for 1983, 4.6% for 1984 and for 1985, and 3.5% for 1986. Indexing was suspended for 1987. The brackets were set by AB 53 (Stats. 1987, Ch. 1138). For 1988, indexing was reestablished at 4.6%. Indexing was 5.3% for 1989, 4.8% for 1990, 4.3% for 1991, 3.6% for 1992, and 2.5% for 1993. Indexing reflects the June to June change in the California Consumer Price Index less 3% for 1978 and 1979 and full indexing for 1980 and subsequent years (Stats. 1978, Ch. 569).
- g. The maximum tax rate was lowered from 11% to 9.3% effective for the 1987 taxable year. The number of tax brackets was reduced from 11 to 6. Also replaced the preference tax with a 7% alternative minimum tax (Stats. 1987, Ch. 1138).
- h. A 10% and 11% tax rate were added, increasing the maximum tax rate from 9.3%, effective for the 1991 through 1995 taxable years (Stats. 1991, Ch. 117).
- i. Tax brackets were eased for heads of household effective with the 1974 taxable year (Stats. 1973, Ch. 1180).

Table 2.5. CPI-U. [Ref: Consumer Price Index, 1913-2002.

---

CPI-U		
Base year is chained;		
1982-1984 = 100		
Annual Percent Change		
Year	Annual Average	(Rate of Inflation)
1913	9.9	--
1914	10.0	1.0
1915	10.1	1.0
1916	10.9	7.9
1917	12.8	17.4
1918	15.1	18.0
1919	17.3	14.6
1920	20.0	15.6
1921	17.9	-10.5
1922	16.8	-6.1
1923	17.1	1.8
1924	17.1	0.0
1925	17.5	2.3
1926	17.7	1.1
1927	17.4	-1.7
1928	17.1	-1.7
1929	17.1	0.0
1930	16.7	-2.3
1931	15.2	-9.0
1932	13.7	-9.9
1933	13.0	-5.1
1934	13.4	3.1
1935	13.7	2.2
1936	13.9	1.5

1937	14.4	3.6
1938	14.1	-2.1
1939	13.9	-1.4
1940	14.0	0.7
1941	14.7	5.0
1942	16.3	10.9
1943	17.3	6.1
1944	17.6	1.7
1945	18.0	2.3
1946	19.5	8.3
1947	22.3	14.4
1948	24.1	8.1
1949	23.8	-1.2
1950	24.1	1.3
1951	26.0	7.9
1952	26.5	1.9
1953	26.7	0.8
1954	26.9	0.7
1955	26.8	-0.4
1956	27.2	1.5
1957	28.1	3.3
1958	28.9	2.8
1959	29.1	0.7
1960	29.6	1.7
1961	29.9	1.0
1962	30.2	1.0
1963	30.6	1.3
1964	31.0	1.3
1965	31.5	1.6
1966	32.4	2.9
1967	33.4	3.1
1968	34.8	4.2
1969	36.7	5.5
1970	38.8	5.7
1971	40.5	4.4
1972	41.8	3.2



1973	44.4	6.2
1974	49.3	11.0
1975	53.8	9.1
1976	56.9	5.8
1977	60.6	6.5
1978	65.2	7.6
1979	72.6	11.3
1980	82.4	13.5
1981	90.9	10.3
1982	96.5	6.2
1983	99.6	3.2
1984	103.9	4.3
1985	107.6	3.6
1986	109.6	1.9
1987	113.6	3.6
1988	118.3	4.1
1989	124.0	4.8
1990	130.7	5.4
1991	136.2	4.2
1992	140.3	3.0
1993	144.5	3.0
1994	148.2	2.6
1995	152.4	2.8
1996	156.9	2.9
1997	160.5	2.3
1998	163.0	1.6
1999	166.6	2.2
2000	172.2	3.4
2001	177.1	2.8
2002	179.3*	1.2

\*An estimate for 2002 is based on the change in the CPI from first quarter 2001 to first quarter 2002.

THIS PAGE INTENTIONALLY LEFT BLANK

### **III. THE EFFECTS OF STATE INCOME TAXES ON THE ELASTICITY OF INCOME**

#### **A. BACKGROUND AND GRAPHIC ILLUSTRATION OF DEADWEIGHT LOSS**

Martin Feldstein, Harvard University professor of economics and president of the National Bureau of Economic Research, used the Social Security tax to calculate the deadweight loss of the Social Security program. This chapter uses Feldstein's methods and formulas—substituting California state income taxes for Social Security taxes—to calculate the deadweight loss and show how much greater it is when state taxes are imposed in addition to federal taxes on wages. The calculations for deadweight loss normally start with a zero tax base and add a tax to calculate deadweight loss.

Figure 3.1 illustrates a labor market at equilibrium, without federal income taxes. The employer surplus is the area below the demand curve down to the wage paid and out to the quantity of labor supplied (triangle ABD). The employee surplus is the area above the supply curve up to the wage paid and out to the quantity of labor supplied (triangle DBC). No deadweight loss is incurred.

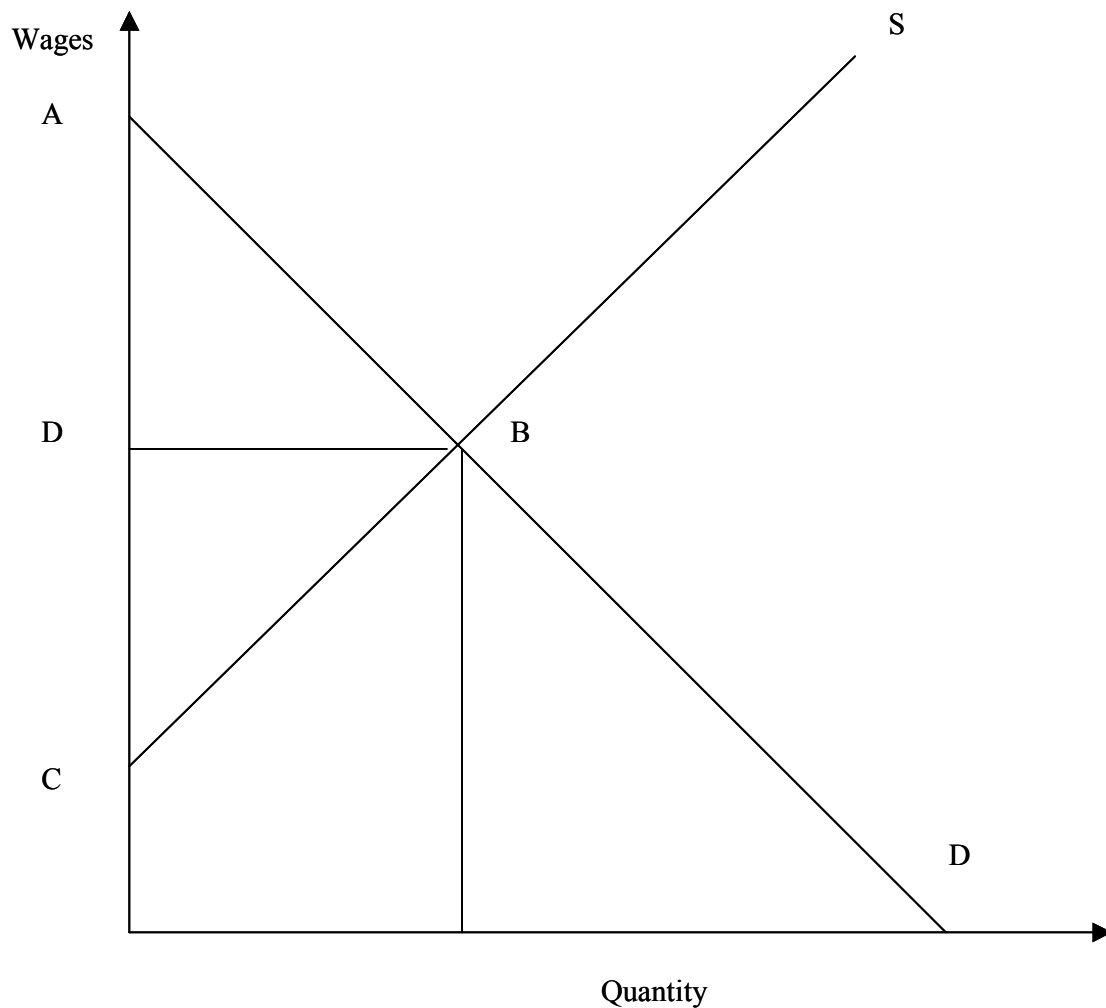


Figure 3.1. Labor Market at Equilibrium.

Figure 3.2 shows the same market with federal income taxes imposed on wages. The supply curve  $S$  has shifted up to  $S^1$ . The rectangle  $HBDF$  is the revenue collected by the federal government. The triangle  $ABH$  is the new employer surplus, and the triangle  $FDE$  is the new employee surplus. The triangle  $BCD$  is the deadweight loss caused by the federal tax. It is not collected as revenue by the government; nor is it employee or employer surplus. This small triangle is waste or loss caused by the federal tax on income.

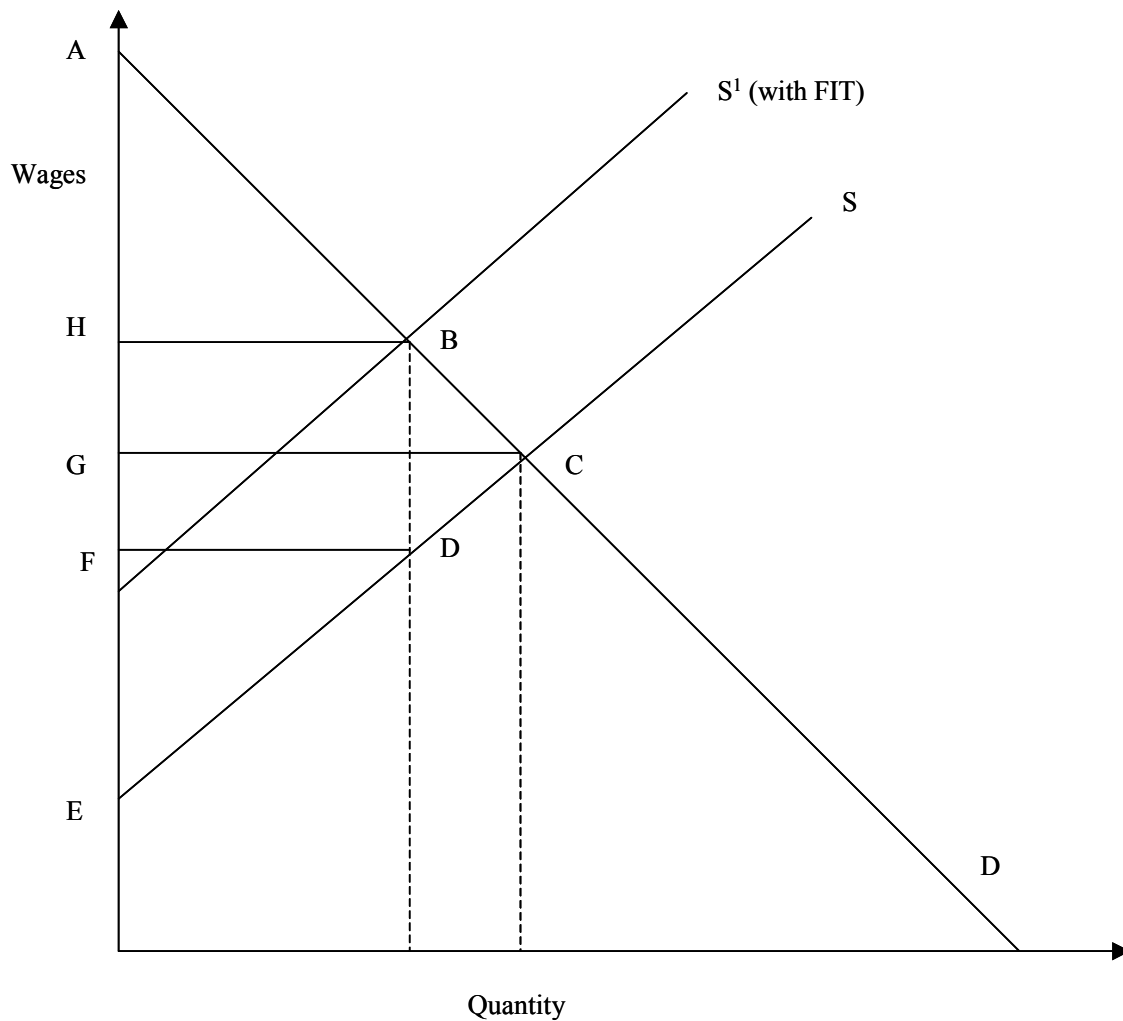


Figure 3.2. Labor Market with FIT.

Figure 3.3 illustrates the effect of imposing a state income tax in addition to a federal tax on wages. The total deadweight loss, represented by triangle BDF, is much larger. Deadweight loss caused by the state income tax is the trapezoid BCEF. The state revenue collected is the rectangle LBMJ. The federal revenue collected was the rectangle KCEI and is now the much smaller rectangle JMFH. Employer and employee surpluses are even smaller—i.e., the triangles ABL and HFG, respectively. The state income tax has exacerbated the deadweight loss from a federal tax on

wages. Once again, this much larger triangle, BDF, is revenue neither collected by the state or federal governments nor a gain to employee and employer surpluses.

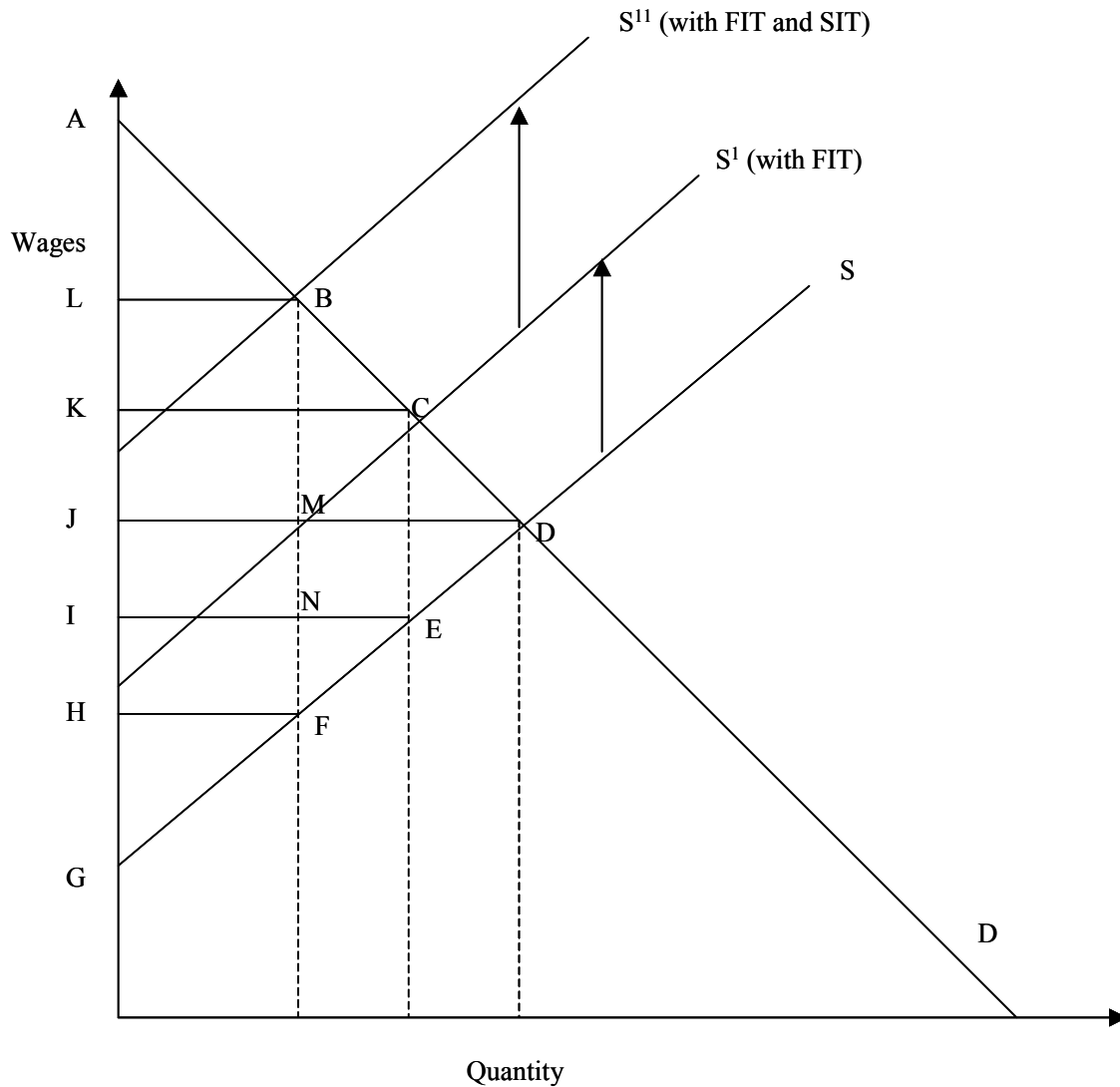


Figure 3.3. Labor Market with FIT and SIT.

#### B. CALCULATING DEADWEIGHT LOSS (DWL)

Graphs are a simple way to visually demonstrate how taxes create deadweight loss. The next step is to quantify the DWL by using the same equation Feldstein used to calculate the DWL caused by a Social Security tax. Feldstein borrowed the equation, written in 1964 by

economist Arnold Harberger and modified by economist Edgar Browning in a piece written for *the American Economic Review* titled, "On the Marginal Welfare Cost of Taxation." Feldstein explains how and why Browning modified the original equation for deadweight loss:

Browning (1987) showed that, when the relevant behavioral elasticity is measured in the presence of the tax, the original Hargberger (1964) formula for the deadweight loss of a tax with marginal tax rate  $t$  on a wage base of  $wL$  must be modified to  $DWL = 0.5 \epsilon t^2 wL / (1-t)$  where  $\epsilon$  is the compensated elasticity of the tax base ( $wL$ ) with respect to the marginal net of tax share,  $1-t$ . The increase in the deadweight loss because the marginal tax rate is at  $t_2$  rather than  $t_1$  is therefore  $\Delta DWL = 0.5 \epsilon (t_2^2 - t_1^2) wL / (1-t_2)$ . [Ref. 6:p. 9]

In the following tables, the modified formula  $DWL = 0.5 \epsilon t^2 wL / (1-t)$  was used to calculate the deadweight loss from a state income tax on wages in 1958 and 1977. The 1958 dollar figures are inflation adjusted to 1977 dollars to facilitate comparison of same-year dollars. The calculations for  $\Delta DWL$  were accomplished by calculating the DWL in 1958, inflation adjusting to 1977 dollars and then subtracting that DWL from 1977's DWL, as opposed to using the equation above—i.e.,  $\Delta DWL = 0.5 \epsilon (t_2^2 - t_1^2) wL / (1-t_2)$ . The purpose of the tables is to show how bracket creep exacerbates DWL from taxation.

Table 3.1, the first of four tables, uses an elasticity of .3. As will be demonstrated, DWL increases as elasticity increases.

Y58	SIT	Y77	TIR	Hyr	E	FIT	t1	t1/2	t2	t2/2	t41	t42	adj dW58	dW77	adj Rev t1	Rev t2	DRv	DdW	DdW/DRv
\$ 1,000	1%	\$ 2,097	1%	2000	0.3	15%	16%	2.58%	16%	2.560%	84%	84%	\$ 9.59	\$ 9.59	\$ 336	336.50	-	\$ -	0.00%
\$ 3,000	1%	\$ 6,291	2%	2000	0.3	15%	16%	2.58%	17%	2.890%	84%	83%	\$ 28.76	\$ 32.86	\$ 1,007	1,009.41	62.91	\$ 4.10	6.51%
\$ 4,000	1%	\$ 8,388	3%	2000	0.3	15%	16%	2.58%	18%	3.240%	84%	82%	\$ 38.34	\$ 49.71	\$ 1,342	1,509.76	167.75	\$ 11.37	6.78%
\$ 5,000	1%	\$ 10,484	4%	2000	0.3	15%	16%	2.58%	19%	3.610%	84%	81%	\$ 47.93	\$ 70.09	\$ 1,678	1,992.04	314.53	\$ 22.16	7.08%
\$ 7,000	1%	\$ 14,678	5%	2000	0.3	15%	16%	2.58%	20%	4.000%	84%	80%	\$ 67.10	\$ 110.09	\$ 2,349	2,995.64	587.13	\$ 42.99	7.32%
\$ 9,000	1%	\$ 18,872	6%	2000	0.3	15%	16%	2.58%	21%	4.410%	84%	79%	\$ 86.27	\$ 158.02	\$ 3,020	3,953.11	943.60	\$ 71.75	7.60%
\$ 10,000	1%	\$ 20,989	7%	2000	0.3	15%	16%	2.58%	22%	4.840%	84%	78%	\$ 95.86	\$ 195.17	\$ 3,355	4,613.15	1,258.13	\$ 99.31	7.89%
\$ 12,000	2%	\$ 25,163	8%	2000	0.3	15%	17%	2.89%	23%	5.290%	83%	77%	\$ 131.42	\$ 259.31	\$ 4,278	5,787.40	1,509.76	\$ 127.88	8.47%
\$ 13,000	2%	\$ 27,260	9%	2000	0.3	15%	17%	2.89%	24%	5.760%	83%	76%	\$ 142.37	\$ 309.90	\$ 4,634	6,542.28	1,908.17	\$ 167.52	8.78%
\$ 14,000	2%	\$ 29,356	10%	2000	0.3	15%	17%	2.89%	25%	6.250%	83%	75%	\$ 153.33	\$ 366.96	\$ 4,991	7,339.10	2,348.51	\$ 213.63	9.10%
\$ 15,000	2%	\$ 31,453	11%	2000	0.3	15%	17%	2.89%	26%	6.760%	83%	74%	\$ 164.28	\$ 431.00	\$ 5,347	8,177.85	2,830.80	\$ 266.72	9.42%
\$ 17,000	2%	\$ 35,647	11%	2000	0.3	15%	17%	2.89%	26%	6.760%	83%	74%	\$ 166.18	\$ 488.46	\$ 6,080	9,288.24	3,208.24	\$ 302.28	9.42%
\$ 20,000	2%	\$ 41,938	11%	2000	0.3	15%	17%	2.89%	26%	6.760%	83%	74%	\$ 219.04	\$ 574.66	\$ 7,129	10,903.81	3,774.39	\$ 356.62	9.42%
\$ 22,000	3%	\$ 46,131	11%	2000	0.3	15%	18%	3.24%	26%	6.760%	82%	74%	\$ 273.41	\$ 632.13	\$ 8,304	11,994.19	3,680.52	\$ 388.71	9.72%
\$ 25,000	3%	\$ 52,422	11%	2000	0.3	15%	18%	3.24%	26%	6.760%	82%	74%	\$ 310.70	\$ 718.33	\$ 9,436	13,629.76	4,193.77	\$ 407.63	9.72%
\$ 35,000	4%	\$ 73,391	11%	2000	0.3	15%	19%	3.61%	26%	6.760%	81%	74%	\$ 480.63	\$ 1,005.66	\$ 13,944	19,081.66	5,137.37	\$ 515.02	10.03%
\$ 45,000	5%	\$ 94,360	11%	2000	0.3	15%	20%	4.00%	26%	6.760%	80%	74%	\$ 707.70	\$ 1,292.99	\$ 18,872	24,533.56	5,661.59	\$ 585.29	10.34%
\$ 55,000	6%	\$ 115,329	11%	2000	0.3	15%	21%	4.41%	26%	6.760%	79%	74%	\$ 955.70	\$ 1,580.32	\$ 24,219	29,955.47	5,766.44	\$ 614.62	10.63%

Table 3.1. Deadweight Loss from State Taxes with an Elasticity of .3.

Refer to Table 3.1. Throughout all the analysis we assume, for computational simplicity, that the marginal tax rate is also the average tax rate on taxable income. In other words, we assume a flat tax rate. A married person filing a joint return in 1958 with a taxable income of \$15,000 is in a marginal state income tax (SIT) bracket of two percent. Therefore, two percent of the person's incremental income is collected for SIT. This person pays a marginal federal income tax rate (FIT) of 15 percent; thus, his combined total tax rate, SIT + FIT, is 17 percent. Assuming that he does not receive any real pay increases, after adjusting for inflation he earns \$31,453 in 1977 dollars and is now paying an 11 percent SIT. The percentage increase in his marginal tax rate is 450%. The DWL for 1958 and inflation-adjusted to 1977 is \$164.28. The DWL for 1977 is \$431 and the delta, or increase in DWL from 1958 to 1977, is \$266.72. The revenue collected in 1958 and adjusted for inflation to 1977 is \$5,347. Revenue for 1977 is \$8,177. The delta, or increase in revenue from 1958 to 1977, is \$2831. By dividing the delta DWL by the



delta revenue, the DWL as percentage of revenue collected is calculated at 9.42 percent. This means that it costs 9.42 cents for every additional dollar collected in revenue from this person, or that 9.42 cents on the dollar is lost to DWL. Notice that for a person in the highest marginal SIT bracket for 1977, 11 percent, it costs more than ten cents for every dollar collected as revenue.

Table 3.2 is the same as Table 3.1 with the exception of elasticity. If elasticity is increased to .5, the incremental DWL as percentage of incremental revenue collected is now 15.70 percent and almost 18 percent for the highest marginal tax bracket. And for Tables 3.3 and 3.4, the incremental DWL as percentage of incremental revenue collected for the person earning \$15,000 in 1958 and for a person in the highest marginal tax bracket are 21.98/31.41 and 24.87/35.53 percent, respectively.

wL58	58TR	wL77	77TR	HrYr	E	FT	t1	t1'2	t2	t2'2	1-t1	1-t2	adj dw58	dw77	adj Revt1	Rev12	DRev	Ddw	Ddw/Drev
\$ 1,000	1%	\$ 2,097	1%	2000	0.5	15%	16%	2.56%	16%	2.56%	84%	84%	\$ 15.98	\$ 15.98	\$ 335.50	\$ 335.50	\$ -	\$ -	0.00%
\$ 3,000	1%	\$ 6,291	2%	2000	0.5	15%	16%	2.56%	17%	2.89%	84%	83%	\$ 47.93	\$ 54.76	\$ 1,006.51	\$ 1,069.41	\$ 62.91	\$ 6.83	10.86%
\$ 4,000	1%	\$ 8,388	3%	2000	0.5	15%	16%	2.56%	18%	3.24%	84%	82%	\$ 63.91	\$ 82.85	\$ 1,342.01	\$ 1,509.76	\$ 167.75	\$ 18.95	11.30%
\$ 5,000	1%	\$ 10,484	4%	2000	0.5	15%	16%	2.56%	19%	3.61%	84%	81%	\$ 79.88	\$ 116.82	\$ 1,677.51	\$ 1,992.04	\$ 314.53	\$ 36.94	11.74%
\$ 7,000	1%	\$ 14,678	5%	2000	0.5	15%	16%	2.56%	20%	4.00%	84%	80%	\$ 111.83	\$ 183.48	\$ 2,348.51	\$ 2,935.64	\$ 587.13	\$ 71.64	12.20%
\$ 9,000	1%	\$ 18,872	6%	2000	0.5	15%	16%	2.56%	21%	4.41%	84%	79%	\$ 143.79	\$ 263.37	\$ 3,019.52	\$ 3,963.11	\$ 943.60	\$ 119.59	12.67%
\$ 10,000	1%	\$ 20,969	7%	2000	0.5	15%	16%	2.56%	22%	4.84%	84%	78%	\$ 159.76	\$ 325.29	\$ 3,355.02	\$ 4,613.15	\$ 1,258.13	\$ 165.52	13.16%
\$ 12,000	2%	\$ 25,163	8%	2000	0.5	15%	17%	2.89%	23%	5.29%	83%	77%	\$ 219.04	\$ 432.18	\$ 4,277.65	\$ 5,787.40	\$ 1,509.76	\$ 213.14	14.12%
\$ 13,000	2%	\$ 27,260	9%	2000	0.5	15%	17%	2.89%	24%	5.76%	83%	76%	\$ 237.29	\$ 516.50	\$ 4,634.12	\$ 6,542.28	\$ 1,908.17	\$ 279.21	14.63%
\$ 14,000	2%	\$ 29,356	10%	2000	0.5	15%	17%	2.89%	25%	6.25%	83%	75%	\$ 255.54	\$ 611.59	\$ 4,990.59	\$ 7,339.10	\$ 2,348.51	\$ 366.05	15.16%
\$ 15,000	2%	\$ 31,453	11%	2000	0.5	15%	17%	2.89%	26%	6.76%	83%	74%	\$ 273.80	\$ 718.33	\$ 5,347.06	\$ 8,177.85	\$ 2,830.80	\$ 444.53	15.70%
\$ 17,000	2%	\$ 35,647	11%	2000	0.5	15%	17%	2.89%	26%	6.76%	83%	74%	\$ 310.30	\$ 814.10	\$ 6,060.00	\$ 9,268.24	\$ 3,208.24	\$ 503.80	15.70%
\$ 20,000	2%	\$ 41,938	11%	2000	0.5	15%	17%	2.89%	26%	6.76%	83%	74%	\$ 365.06	\$ 957.77	\$ 7,129.41	\$ 10,903.81	\$ 3,774.39	\$ 592.71	15.70%
\$ 22,000	3%	\$ 46,131	11%	2000	0.5	15%	18%	3.24%	26%	6.76%	82%	74%	\$ 455.69	\$ 1,053.54	\$ 8,303.67	\$ 11,994.19	\$ 3,680.52	\$ 597.85	16.20%
\$ 25,000	3%	\$ 52,422	11%	2000	0.5	15%	18%	3.24%	26%	6.76%	82%	74%	\$ 517.83	\$ 1,197.21	\$ 9,435.99	\$ 13,629.76	\$ 4,193.77	\$ 679.38	16.20%
\$ 35,000	4%	\$ 73,391	11%	2000	0.5	15%	19%	3.61%	26%	6.76%	81%	74%	\$ 817.72	\$ 1,676.09	\$ 13,944.29	\$ 19,081.66	\$ 5,137.37	\$ 858.37	16.71%
\$ 45,000	5%	\$ 94,360	11%	2000	0.5	15%	20%	4.00%	26%	6.76%	80%	74%	\$ 1,179.50	\$ 2,154.98	\$ 18,871.97	\$ 24,533.56	\$ 5,661.59	\$ 975.48	17.23%
\$ 55,000	6%	\$ 115,329	11%	2000	0.5	15%	21%	4.41%	26%	6.76%	79%	74%	\$ 1,609.49	\$ 2,633.86	\$ 24,219.03	\$ 29,965.47	\$ 5,766.44	\$ 1,024.37	17.76%

Table 3.2. Deadweight Loss from State Taxes with an Elasticity of .5.

wL58	58TR	wL77	77TR	Hrlyr	E	FT	t1	t1^2	t2	t2^2	1-t1	1-t2	dwl58	dwl77	Rev t1	Rev t2	D Rev	D dwl	Ddwl/Drev
\$ 1,000	1%	\$ 2,097	1%	2000	0.7	15%	16%	2.56%	16%	2.560%	84%	84%	\$ 22.37	\$ 22.37	\$ 336.50	\$ 336.50	\$ -	\$ -	0.00%
\$ 3,000	1%	\$ 6,291	2%	2000	0.7	15%	16%	2.56%	17%	2.890%	84%	83%	\$ 67.10	\$ 76.66	\$ 1,006.51	\$ 1,069.41	\$ 62.91	\$ 9.56	15.20%
\$ 4,000	1%	\$ 8,388	3%	2000	0.7	15%	16%	2.56%	18%	3.240%	84%	82%	\$ 89.47	\$ 115.99	\$ 1,342.01	\$ 1,509.76	\$ 167.75	\$ 26.53	15.81%
\$ 5,000	1%	\$ 10,484	4%	2000	0.7	15%	16%	2.56%	19%	3.610%	84%	81%	\$ 111.83	\$ 163.54	\$ 1,677.51	\$ 1,992.04	\$ 314.53	\$ 51.71	16.44%
\$ 7,000	1%	\$ 14,678	5%	2000	0.7	15%	16%	2.56%	20%	4.000%	84%	80%	\$ 156.57	\$ 256.87	\$ 2,348.51	\$ 2,935.64	\$ 587.13	\$ 100.30	17.08%
\$ 9,000	1%	\$ 18,872	6%	2000	0.7	15%	16%	2.56%	21%	4.410%	84%	79%	\$ 201.30	\$ 368.72	\$ 3,019.52	\$ 3,963.11	\$ 943.60	\$ 167.42	17.74%
\$ 10,000	1%	\$ 20,969	7%	2000	0.7	15%	16%	2.56%	22%	4.840%	84%	78%	\$ 223.67	\$ 455.40	\$ 3,355.02	\$ 4,613.15	\$ 1,258.13	\$ 231.73	18.42%
\$ 12,000	2%	\$ 25,163	8%	2000	0.7	15%	17%	2.89%	23%	5.290%	83%	77%	\$ 306.65	\$ 605.05	\$ 4,277.65	\$ 5,787.40	\$ 1,509.76	\$ 298.40	19.76%
\$ 13,000	2%	\$ 27,260	9%	2000	0.7	15%	17%	2.89%	24%	5.760%	83%	76%	\$ 332.20	\$ 723.09	\$ 4,634.12	\$ 6,542.28	\$ 1,908.17	\$ 390.89	20.49%
\$ 14,000	2%	\$ 29,356	10%	2000	0.7	15%	17%	2.89%	25%	6.250%	83%	75%	\$ 357.76	\$ 856.23	\$ 4,990.59	\$ 7,339.10	\$ 2,348.51	\$ 498.47	21.22%
\$ 15,000	2%	\$ 31,453	11%	2000	0.7	15%	17%	2.89%	26%	6.760%	83%	74%	\$ 383.31	\$ 1,005.66	\$ 5,347.06	\$ 8,177.85	\$ 2,830.80	\$ 622.34	21.98%
\$ 17,000	2%	\$ 35,647	11%	2000	0.7	15%	17%	2.89%	26%	6.760%	83%	74%	\$ 434.42	\$ 1,139.74	\$ 6,060.00	\$ 9,268.24	\$ 3,208.24	\$ 705.32	21.98%
\$ 20,000	2%	\$ 41,938	11%	2000	0.7	15%	17%	2.89%	26%	6.760%	83%	74%	\$ 511.08	\$ 1,340.87	\$ 7,129.41	\$ 10,903.81	\$ 3,774.39	\$ 829.79	21.98%
\$ 22,000	3%	\$ 46,131	11%	2000	0.7	15%	18%	3.24%	26%	6.760%	82%	74%	\$ 637.96	\$ 1,474.96	\$ 8,303.67	\$ 11,994.19	\$ 3,690.52	\$ 837.00	22.68%
\$ 25,000	3%	\$ 52,422	11%	2000	0.7	15%	18%	3.24%	26%	6.760%	82%	74%	\$ 724.96	\$ 1,676.09	\$ 9,436.99	\$ 13,629.76	\$ 4,193.77	\$ 951.13	22.68%
\$ 35,000	4%	\$ 73,391	11%	2000	0.7	15%	19%	3.61%	26%	6.760%	81%	74%	\$ 1,144.81	\$ 2,346.53	\$ 13,944.29	\$ 19,081.66	\$ 5,137.37	\$ 1,201.72	23.39%
\$ 45,000	5%	\$ 94,360	11%	2000	0.7	15%	20%	4.00%	26%	6.760%	80%	74%	\$ 1,651.30	\$ 3,016.97	\$ 18,871.97	\$ 24,533.56	\$ 5,661.59	\$ 1,365.67	24.12%
\$ 55,000	6%	\$ 115,329	11%	2000	0.7	15%	21%	4.41%	26%	6.760%	79%	74%	\$ 2,253.29	\$ 3,687.40	\$ 24,219.03	\$ 29,985.47	\$ 5,766.44	\$ 1,434.11	24.87%

Table 3.3. Deadweight Loss from State Taxes with an Elasticity of .7.

wL58	58TR	wL77	77TR	Hrlyr	E	FT	t1	t1^2	t2	t2^2	1-t1	1-t2	adj dwl58	dwl77	adj Rev t1	Rev t2	D Rev	D dwl	Ddwl/Drev
\$ 1,000	1%	\$ 2,097	1%	2000	1	15%	16%	2.56%	16%	2.560%	84%	84%	\$ 31.95	\$ 31.95	\$ 336	335.50	-	\$ -	0.00%
\$ 3,000	1%	\$ 6,291	2%	2000	1	15%	16%	2.56%	17%	2.890%	84%	83%	\$ 95.86	\$ 109.52	\$ 1,007	1,069.41	62.91	\$ 13.66	21.72%
\$ 4,000	1%	\$ 8,388	3%	2000	1	15%	16%	2.56%	18%	3.240%	84%	82%	\$ 127.81	\$ 165.71	\$ 1,342	1,509.76	167.75	\$ 37.89	22.59%
\$ 5,000	1%	\$ 10,484	4%	2000	1	15%	16%	2.56%	19%	3.610%	84%	81%	\$ 159.76	\$ 233.63	\$ 1,678	1,992.04	314.53	\$ 73.87	23.49%
\$ 7,000	1%	\$ 14,678	5%	2000	1	15%	16%	2.56%	20%	4.000%	84%	80%	\$ 223.67	\$ 366.96	\$ 2,349	2,935.64	587.13	\$ 143.29	24.40%
\$ 9,000	1%	\$ 18,872	6%	2000	1	15%	16%	2.56%	21%	4.410%	84%	79%	\$ 287.57	\$ 526.74	\$ 3,020	3,963.11	943.60	\$ 239.17	25.35%
\$ 10,000	1%	\$ 20,969	7%	2000	1	15%	16%	2.56%	22%	4.840%	84%	78%	\$ 319.53	\$ 650.57	\$ 3,355	4,613.15	1,258.13	\$ 331.05	26.31%
\$ 12,000	2%	\$ 25,163	8%	2000	1	15%	17%	2.89%	23%	5.290%	83%	77%	\$ 438.07	\$ 864.35	\$ 4,278	5,787.40	1,509.76	\$ 426.28	28.24%
\$ 13,000	2%	\$ 27,260	9%	2000	1	15%	17%	2.89%	24%	5.760%	83%	76%	\$ 474.58	\$ 1,032.99	\$ 4,634	6,542.28	1,908.17	\$ 558.41	29.26%
\$ 14,000	2%	\$ 29,356	10%	2000	1	15%	17%	2.89%	25%	6.250%	83%	75%	\$ 511.08	\$ 1,223.18	\$ 4,991	7,339.10	2,348.51	\$ 712.10	30.32%
\$ 15,000	2%	\$ 31,453	11%	2000	1	15%	17%	2.89%	26%	6.760%	83%	74%	\$ 547.59	\$ 1,436.65	\$ 5,347	8,177.85	2,830.80	\$ 889.06	31.41%
\$ 17,000	2%	\$ 35,647	11%	2000	1	15%	17%	2.89%	26%	6.760%	83%	74%	\$ 620.60	\$ 1,628.20	\$ 6,060	9,268.24	3,208.24	\$ 1,007.60	31.41%
\$ 20,000	2%	\$ 41,938	11%	2000	1	15%	17%	2.89%	26%	6.760%	83%	74%	\$ 730.12	\$ 1,915.53	\$ 7,129	10,903.81	3,774.39	\$ 1,185.41	31.41%
\$ 22,000	3%	\$ 46,131	11%	2000	1	15%	18%	3.24%	26%	6.760%	82%	74%	\$ 911.38	\$ 2,107.09	\$ 8,304	11,994.19	3,690.52	\$ 1,195.71	32.40%
\$ 25,000	3%	\$ 52,422	11%	2000	1	15%	18%	3.24%	26%	6.760%	82%	74%	\$ 1,035.66	\$ 2,394.42	\$ 9,436	13,629.76	4,193.77	\$ 1,358.76	32.40%
\$ 35,000	4%	\$ 73,391	11%	2000	1	15%	19%	3.61%	26%	6.760%	81%	74%	\$ 1,635.44	\$ 3,352.18	\$ 13,944	19,081.66	5,137.37	\$ 1,716.74	33.42%
\$ 45,000	5%	\$ 94,360	11%	2000	1	15%	20%	4.00%	26%	6.760%	80%	74%	\$ 2,359.00	\$ 4,309.95	\$ 18,872	24,533.56	5,661.59	\$ 1,950.95	34.46%
\$ 55,000	6%	\$ 115,329	11%	2000	1	15%	21%	4.41%	26%	6.760%	79%	74%	\$ 3,218.99	\$ 5,267.72	\$ 24,219	29,985.47	5,766.44	\$ 2,048.73	35.53%

Table 3.4. Deadweight Loss from State Taxes with an Elasticity of 1.

The worst-case scenario, or the scenario that creates the most extra waste as a percentage of extra revenue collected, is for a person in the highest marginal tax bracket with an elasticity of 1. It costs more than one dollar to collect three dollars in revenue from this person. One out of every three dollars is wasted.

## **IV. CONCLUSION**

### **A. CONCLUSIONS**

One of the major factors in the location of economic activity is the tax system in that location. All other things equal, the lower the tax rate in an area, the more attractive the area is for economic activity. This matters for location across states, because movement from one state to another is relatively low cost. The fact that workers can move from California to Nevada, for example, means that wages net of taxes will tend to equalize, which means that wages net of taxes will tend to be higher in the high-tax-rate state. This fact, in turn, means that production will be more expensive in the high-tax state. This is particularly relevant for defense production and even location of military bases, because the Department of Defense (DoD) often has the option of choosing one state over another.

Bracket creep, if left unchecked, will cause deadweight to continue to grow. It is unrealistic to expect state taxes to go away entirely. But deadweight loss incurred by over-taxation due to bracket creep can be minimized. Industries, especially defense related industries, do have options for locating plants, companies and other defense related service. The amount of taxes Californians pay due to bracket creep affects the wage levels of employees. Defense industries looking for a future location, or deciding whether or not to remain in California must take wages--and therefore state income tax rates--into consideration when making those decisions.

THIS PAGE INTENTIONALLY LEFT BLANK

## LIST OF REFERENCES

1. State of California Technology, Trade & Commerce Agency 16 Oct 2001.  
<commerce.ca.gov/state/ttca/ttca\_homepage.jsp>.
2. James E. Hartley, Steven M. Sheffrin and J. David Vasche, "Reform During Crisis: The Transformation of California's Fiscal System During the Great Depression," *Journal of Economic History* 56.3 (1996).
3. David R. Doerr, "Capsule History of the California Tax Structure: Part IV, Chapter One - The Tax and Spend Years, 1933-1958," *Cal-Tax Digest* November (1997).
4. David R. Doerr, "Capsule History of the California Tax Structure: Part IV, Chapter Two - The Tax and Spend Years, 1959-1967," *Cal-Tax Digest* December (1997).
5. Taxopedia,  
<http://www.taxopedia.com/terms/b/bracketcreep.asp>.
6. Martin Feldstein, "The Missing Piece in Policy Analysis: Social Security Reform," *American Economic Review*, Vol. 86, No. 2 (May 1996).
7. Edgar K. Browning, "On the Marginal Welfare Cost of Taxation," *American Economic Review*, Vol. 77, Issue 1 (Mar 1987), 11-23.

THIS PAGE INTENTIONALLY LEFT BLANK

## INITIAL DISTRIBUTION LIST

1. Defense Technical Information Center  
Ft. Belvoir, Virginia
2. Dudley Knox Library  
Naval Postgraduate School  
Monterey, California
3. Erik J. Neal  
Monterey, California
4. David R. Henderson  
Graduate School of Business and Public Policy  
Naval Postgraduate School  
Monterey, California
5. John E. Muttty  
Graduate School of Business and Public Policy  
Naval Postgraduate School  
Monterey, California
6. David R. Doerr  
California Tax Payers Association  
Sacramento, California
7. Alvin Rabushka  
Hoover Institution  
Stanford, California

